



# NRC NEWS

## U.S. NUCLEAR REGULATORY COMMISSION

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### **HIGH-LEVEL WASTE: CHALLENGES FOR THE NRC**

Remarks of Chairman Richard A. Meserve

before the Annual Information and Planning Conference

Office of Inspector General

June 12, 2002

It's a pleasure to address your annual information and planning conference. I am pleased to see that the theme for this year's conference is NRC's Role in Protecting Public Health and Safety in the High-Level Radioactive Waste Arena. You have recognized an important area of NRC activity.

You will be hearing from the staff panel concerning a broad range of issues associated with this topic. I will focus on two areas I believe are the most significant: the review of the potential application to build a high-level waste repository at Yucca Mountain, and the transportation of high-level waste.

I believe that the Agency is approaching one of the most formidable challenges in its history. I am referring to the possibility -- contingent on Congressional action -- that the NRC will receive an application from the Department of Energy for a permit to construct a permanent repository for high-level waste at Yucca Mountain.

It is not an exaggeration to say that no single NRC decision or set of decisions since the response to Three Mile Island is likely to be scrutinized as closely, from a technical, legal, and public confidence standpoint, as those concerning this one-of-a-kind facility at Yucca Mountain. And that is regardless of how the decision comes out.

Let me review briefly where we stand today. As you are probably aware, the Secretary of Energy made a formal recommendation in favor of the Yucca Mountain site; and the President endorsed the DOE Secretary's recommendation. However, the Governor of Nevada has given notice, as the law allows, of the State's disapproval. That has transferred the issue to the Congress. Under the law, the State's disapproval of the Presidential recommendation stands unless, within 90 days of continuous

session, Congress votes to disapprove it. The issue has already come to a vote in the House, where the President's determination was supported by an almost three-to-one margin. In the Senate, the Energy and Natural Resources Committee approved the President's recommendation on June 5 by a closer margin. It now goes to the full Senate for a vote which is likely to be close. If Congress approves the President's action, then DOE has indicated that it intends to submit an application to NRC to construct the Yucca Mountain facility in December of 2004. The law then gives NRC up to four years to decide whether to grant the license, including the completion of the administrative proceeding.

Although we have provided comments on the adequacy of site characterization in terms of a possible license application to construct the facility, the Commission has taken no position on the suitability of the site. Rather, our role, under the Nuclear Waste Policy Act, is to exercise our independent judgment as an expert technical agency and decide the issues on the record developed in the administrative proceeding. This will require schedule discipline, technical excellence, and procedural fairness consistently throughout the review process.

The NRC has for several years been making preparations for the eventuality of an application for a high level waste repository. Last November, we issued Part 63, the regulations setting out the technical requirements a repository must meet in order to be licensed by NRC.<sup>1</sup> These regulations establish performance objectives based on the dose to the reasonably maximally exposed individual, as calculated using reasonable assumptions. Also, as required under EPA's Yucca Mountain standard (40 C.F.R. Part 197), Part 63 also contains requirements for the protection of groundwater. These requirements are somewhat unique to the HLW program in that, in general, our regulations concerning waste disposal are focused on individual protection rather than on the protection of a resource.

I would not for a moment prejudge whether DOE will be able to satisfy us that it has met the demands of the regulations. If it does so, however, I am confident that public health and safety and the environment will be protected, now and in the future.

Although these regulations are risk-informed and performance-based, major challenges exist in demonstrating compliance with the requirements. The system contains both natural and engineered barriers and the system of barriers must function effectively for 10,000 years -- longer than recorded human history. As you can understand, this is unlike any licensing proceeding the agency has faced in the past. To guide the agency's review of a possible license application, the staff recently issued, as a draft for public comment, the Yucca Mountain Review Plan. This Plan is designed to ensure the quality and uniformity of our licensing reviews. I think it is worth describing the plan briefly, to give you a better idea of the scope of the task that will be facing the NRC if an application is submitted.

First there is an acceptance review, which is a preliminary screening of the application to see whether it contains enough information to establish compliance with the regulations. This is not a judgment on the technical adequacy of the application. Rather, it is an evaluation to determine whether the information submitted, if found to be valid, would be sufficient to support granting a license -- in other words, whether the application is ready for the NRC staff to begin its detailed technical review. Even at this stage of the review, there are unique hurdles. Many of you may have heard about the 293 agreements in which DOE committed to provide additional information on technical issues associated with the high level waste repository. At the time of acceptance review, the staff will have to ensure that

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<sup>1</sup> Recently the State of Nevada filed a lawsuit challenging our regulations. *Nevada v. NRC* (D.C. Cir.). We are working with the Department of Justice in defending our regulations.

the information provided under these agreements results in a full and complete license application. All this must be accomplished within 90 days of receiving the application.

The regulations in 10 CFR Part 63 also provide for a preclosure safety analysis. This analysis is designed to ensure that operational exposure limits to workers and the public are not exceeded. This will involve examining the site, the design, potential hazards and their consequences, and the probabilities and uncertainties associated with those hazards. The review will focus on the applicant's ability to demonstrate that the design, construction, and operation of the facility will meet the performance objectives. The staff proposes to allocate resources according to the safety significance of the various systems, structures, and components concerned. Many of the staff's review methods currently used in the licensing of spent fuel handling facilities can be applied to the licensing review of repository pre-closure facilities because of the similarity in functions.

Probably the most complex aspects of the review will be the postclosure period of performance, because it involves estimations of repository performance over thousands of years. Our regulations require DOE to conduct a postclosure performance assessment to demonstrate compliance with performance objectives. This means a systematic analysis of the expected performance of the repository as well as consideration of the probability and consequences of external events, such as volcanos and climate changes, that could affect the facility. Moreover, DOE must demonstrate that both engineered and natural barriers contribute to the isolation of the waste -- DOE cannot rely only on the engineered barriers to meet the dose limits. The postclosure performance objectives also require an assessment of how the facility would perform under conditions of human intrusion. A specific scenario involving drilling into the repository has been adopted based on requirements in the EPA standard.

There is more to the review plan, but I think I have described enough to give you a feel for the magnitude of the challenge, and its complexity. Another challenge DOE faces which I have not focused on today, but which is of equal importance to the production of an acceptable license application, is having an adequate Quality Assurance program. Although DOE has signaled its intent to qualify all data, software and models used in a license application fully, quality management continues to be a challenging program area for DOE.

As the previous discussion indicates, we are operating on the assumption that if an application to build a repository at Yucca Mountain is submitted, the administrative proceeding will be massive -- perhaps as vast and complex as any the Federal Government has ever seen. That in and of itself presents a significant challenge: ensuring that all parties and the decisionmakers have timely access to filings and exhibits.

The framework for making the documents available is something we addressed some time ago by creating the Licensing Support Network (LSN). To save time and money that would otherwise be spent duplicating and mailing copies of documents, the LSN serves as a central location where parties and potential parties can submit and obtain the documents they need electronically.

Before turning you over to the rest of your program, I would like to discuss some of the issues concerning the transportation of high-level waste. Press reports on the repository program have noted that some opponents have expressed concerns about the security of the transportation of spent fuel. Federal regulation of spent fuel transportation is shared by the U.S. Department of Transportation (DOT) and the NRC. DOT regulates the transport of all hazardous materials, including spent fuel, and has established regulations for shippers and carriers regarding, among other things, radiological controls, hazard communication, and training. For our part, NRC establishes design standards for the

casks used to transport licensed spent fuel, and reviews and certifies cask designs prior to their use. We also conduct an inspection and enforcement program, and review and approve physical security plans for spent fuel shipments.

These activities have led to an exemplary safety record -- approximately 1,300 shipments of civilian fuel and 920,000 miles without an accidental radioactive release. But, as elsewhere in our activities, a record of success does not preclude the possibility that undetected weaknesses may exist, and neither the NRC nor its licensees can afford to become complacent. We therefore continually examine the transportation safety program. Over two years ago, we began the Package Performance Study to study cask performance under severe impact and fire accident conditions. The study plan calls for full-scale testing of a cask to confirm computer models of cask response to severe accident conditions. As a part of its evaluation, the staff is analyzing appropriate national transportation accidents, such as the 2001 train accident in Baltimore, to determine if our transportation requirements need to be modified. Finally, we are sponsoring a study to update the evaluation of cask response to acts of sabotage. These studies, together with any resulting changes to our security requirements, if necessary, should further ensure the safety of the transportation of spent fuel.

In conclusion, I have tried today to outline some of the issues likely to confront the agency in the event that an application to construct Yucca Mountain is filed. Although the Office of Nuclear Materials Safety and Safeguards (NMSS) will bear most of the burden of this task, should it come to pass, the entire agency, including the Office of Inspector General, is likely to feel the stress. Indeed, given the intense public and political controversy that has surrounded this project, I would expect that OIG will find itself engaged in a variety of projects related to Yucca Mountain in the years ahead if Congressional approval is granted. I appreciate your foresight in preparing yourselves through this conference.

The importance to this country and to this agency of the tasks ahead is beyond dispute. As in the past, we will be counting on OIG to provide informed, thoughtful, and independent assessments of NRC programs. The agency's challenge will be OIG's challenge as well.

Thank you.